AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method of sensing the activity of neural tissue, the method comprising the steps of:

placing an electrode in a blood vessel proximate to the neural tissue, said electrode being ~~of sufficiently small size such that it is capable of being inserted into a capillary~~ smaller than 10 μm; and

monitoring a signal on the electrode by way of a wire connected to the electrode, wherein the signal is indicative of the electrical brain activity of the neural tissue.

2. (Original) The method of claim 1, wherein the electrode comprises a sensing end, the sensing end of the electrode being placed in the blood vessel proximate to the neural tissue.

3. (Original) The method of claim 1, wherein the electrode is inserted into the blood vessel at a point upstream of a junction with another blood vessel.

4. (Original) The method of claim 3, wherein a sensing end of the electrode is deployed to a point downstream of the junction.

5. (Previously Presented) The method of claim 1, comprising the steps of:

placing a further electrode on the neural tissue proximate to the electrode;

applying a stimulus to the neural tissue;

monitoring a further signal on the further electrode after applying the stimulus to the neural

tissue; and

comparing the signal to the further signal.

6. (Original) The method of claim 1, wherein the electrode comprises a nano-electrode.

7. (Original) The method of claim 1, wherein the electrode comprises an array of nano-electrodes.

8. (Original) The method of claim 7, wherein the nano-electrodes have different lengths.

9. (Original) The method of claim 6, wherein the nano-electrode comprises a cup-like end.

10. (Currently amended) A device for sensing the activity of neural tissue comprising:

a catheter; and

an electrode ~~of sufficiently small size such that it is capable of being inserted into a capillary~~ that is smaller than 10 μm, the electrode being deployed from the catheter in a blood vessel proximate to the neural tissue, wherein a signal on the electrode is monitored by way of a wire connected to the electrode, said signal being indicative of the electrical brain activity of the neural tissue.

11. (Original) The device of claim 10 comprising:

a signal processor, the signal processor being arranged in the catheter and being coupled to the electrode.

12. (Original) The device of claim 11, wherein the signal processor includes:

an amplifier, the amplifier being coupled to the electrode; and

a digital converter, the digital converter converting the output of the amplifier into a digital representation.

13. (Original) The device of claim 12, wherein the digital converter includes a Schmitt trigger.

14. (Original) The device of claim 10 comprising a plurality of electrodes.

15. (Original) The device of claim 14 comprising:

a signal processor, the signal processor being arrange in the catheter and being coupled to the plurality of electrodes.

16. (Original) The device of claim 15, wherein the signal processor includes:

a plurality of amplifiers, each of the plurality of amplifiers being coupled to one of the plurality of electrodes;

a plurality of digital converters, each of the plurality of digital converters converting the output of one of the plurality of amplifiers into a binary representation; and

a multiplexer, the multiplexer being coupled to an output of each of the plurality of digital converters and multiplexing the outputs of the digital converters onto an output signal line.

17. (Original) The device of claim 16, wherein each of the electrodes includes a nano-wire and the output signal line includes a micro-wire.

18. (Currently Amended) A method of stimulating neural tissue, the method comprising the steps of:

placing an electrode in a blood vessel proximate to the neural tissue, said electrode being ~~of sufficiently small size such that it is capable of being inserted into a capillary~~ smaller than 10 μm; and

providing a signal on the electrode by way of a wire connected to the electrode,

wherein the signal stimulates the electrical brain activity of the neural tissue.

19. (Previously presented) The method of claim 18, wherein the electrode comprises an end, the end of the electrode being placed in the blood vessel proximate to the neural tissue.

20. (Previously presented) The method of claim 18, wherein the electrode is inserted into the blood vessel at a point upstream of a junction with another blood vessel.

21. (Previously presented) The method of claim 20, wherein an end of the electrode is deployed to a point downstream of the junction.

22. (Previously presented) The method of claim 18, wherein the electrode comprises a nano-electrode.

23. (Previously presented) The method of claim 18, wherein the electrode comprises an array of nano-electrodes.

24. (Previously presented) The method of claim 23, wherein the nano-electrodes have different lengths.

25. (Previously presented) The method of claim 22, wherein the nano-electrode comprises a cup-like end.

26. (Previously Presented) The method of claim 1 further comprising the step of stimulating neural tissue by providing a stimulation signal to said electrode.

27. (Previously Presented) The method of claim 1 further comprising the steps of:

placing a second electrode in a second blood vessel proximate to the neural tissue, said second electrode being of sufficiently small size such that it is capable of being inserted into a capillary; and

providing a stimulation signal to said second electrode.

28. (Previously Presented) The device of claim 10 wherein said electrode is operative to provide a stimulation signal to said neural tissue.

29. (Previously Presented) The device of claim 10 further comprising a second electrode placed in a second blood vessel proximate to the neural tissue, said second electrode being of sufficiently small size such that it is capable of being inserted into a capillary, said second electrode being operative to provide a stimulation signal to said neural tissue.

30. (Previously Presented) The method of claim 18 further comprising the step of monitoring a monitor signal on said electrode.

31. (Previously Presented) The method of claim 18 further comprising the steps of:

placing a second electrode in a second blood vessel proximate to the neural tissue, said second electrode being of sufficiently small size such that it is capable of being inserted into a capillary; and

providing a monitor signal to said second electrode.

32. (Previously Presented) The method of claim 1 further comprising the step of filtering the signal from said electrode.

33. (Previously Presented) The method of claim 1 further comprising the step of utilizing a differential signal as said electrode signal.

34. (Previously Presented) The method of claim 1 further comprising the step of classifying brain states based on one of neuronal unit activity and field potential analysis.

35. (Previously Presented) The method of claim 1 further comprising the step of correlating electrical activity of neurons with brain states.

36. (Previously Presented) The method of claim 35 further comprising the step of performing pattern classification to determine brain states.

37 - 38 (Cancelled)